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SEPTEMBER 9, 1993

TO: MS. MARCIA BAILEY
U.S. EPA, REGION 10

FROM:ROBERT FARRELL

rept date

SUBJECT: RBT-LETTER OF JULY 10, 1993

WAD 6906

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SEPTEMBER 8, 1993

TO:MS. MARCIA BAILEY

FROM:ROBERT FARRELL

SUBJECT:RBT-LETTER FROM MR. BRYANT ADAMS OF JULY 10, 1993

Mr. Adams's letter of July 10 ,1993 is unusual in several aspects. It is not clear that the impact of several of the items discussed in the letter on the proposed ground water monitoring program and the state of the site investigation is understood. If there is indeed an "underground stream or streams" under this waste site as suggested, the waste should be immediately removed because the site would be on karst terrain or worst. The site would be unsuitable for any kind of waste disposal. However, the data that has been collected to date indicates that there are no such underground streams present. What is present is a zone of higher permeable sand sandwiched between layers of lower permeable sediments. The upper layer is a silt and the lower layer is the cemented Troutdale Formation. A perched water table develops in the sandy layer between these two lower permeable layers when the infiltration through the top layer is greater than the infiltration into the top of the Troutdale Formation.

The observed rise of 20 to 30 feet in the wells in the silt layer is unusual but not unheard of. Two obvious reasons can be provided for the observed relative rise in the water levels in these wells. The most likely is a malfunctioning surface seal that allows the infiltration of precipitation down the annulus between the boring well and the well casing. The second explanation is based on the high moisture content expected in most silt sediments. Most silts will maintain 90% or more of saturation in moist areas. Little additional moisture is necessary to change the percent of saturation from below saturation to 100% saturation. This slight rise in the amount of water in the silt results ns a very rapid rise in the water table with an equally rapid lowering of the water table after the precipitation has stopped. This phenomenon is common in loess deposits in the midwest. Minor amounts of water are involved. The biggest delay in measuring the change in the ground water level is caused by the delay in filling or draining the well casing with water from the silt. Pressure transducers, buried in the sediment, are better suited to measure rapid changes in the water level in the silts.

The second part of Mr. Adams's letter attempts to demonstrate that the low levels of contaminates detected in the water samples are artifacts of the laboratory analysis rather than actually being present in the water samples. The presence of these lower levels of contaminates in the water samples is related to the method of monitoring the site that is discussed in the next paragraph of Mr. Adams's letter. Mr. Newton attempted, over two years, to

demonstrate that the underdrain system is monitoring ground water that has passed under the site. Mr. Newton could not establish this connection. The chemical data provided an alternative demonstration that there is a seasonal interconnection. If it is agreed that the chemical data is in fact incorrect, then it will be necessary to conclude that the interconnection of the underdrain system with the seasonal ground water flow has not been established and additional investigation is necessary.

A careful reading of pages 9 to 12 of the final CME report will indicate that PRC's analysis of the chemical data does, in fact, consider the QA/QC analytical results in writing the CME report. Based on this reading, it is still concluded that the chemical data does support the finding of low levels of contaminates in water samples associated with this site. It is believed that the monitoring program recommended in the CME (pg. 14 and 17) is suited for this site and will provide the earliest warning of a release from the waste. The proposal on pg. 3 of Mr. Adams's letter does not constitute the rigorous monitoring program necessary at this site. There should be water level alarm systems placed on the underdrain and toe drain collection sumps to facilitate the collection of the earliest possible water samples when there is sufficient water available. Water level recorders should be placed on the monitoring wells and sumps. A demonstration should be made that the weather station in Ridgefield would be approximately equivalent to a precipitation recording station at the site itself. An explanation for achieving a rapid response to a precipitation event in the time frame that will be required before the water has chemically equilibrated or infiltrate into the underlaying Troutdale Formation is needed.

The parameters to be monitored should be those contained on table 1 of the CME.